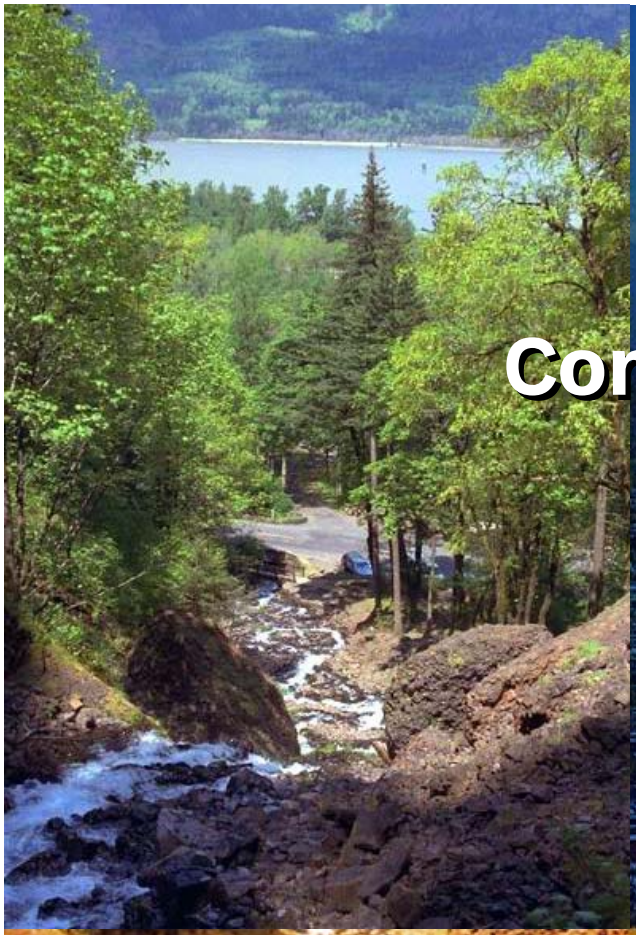


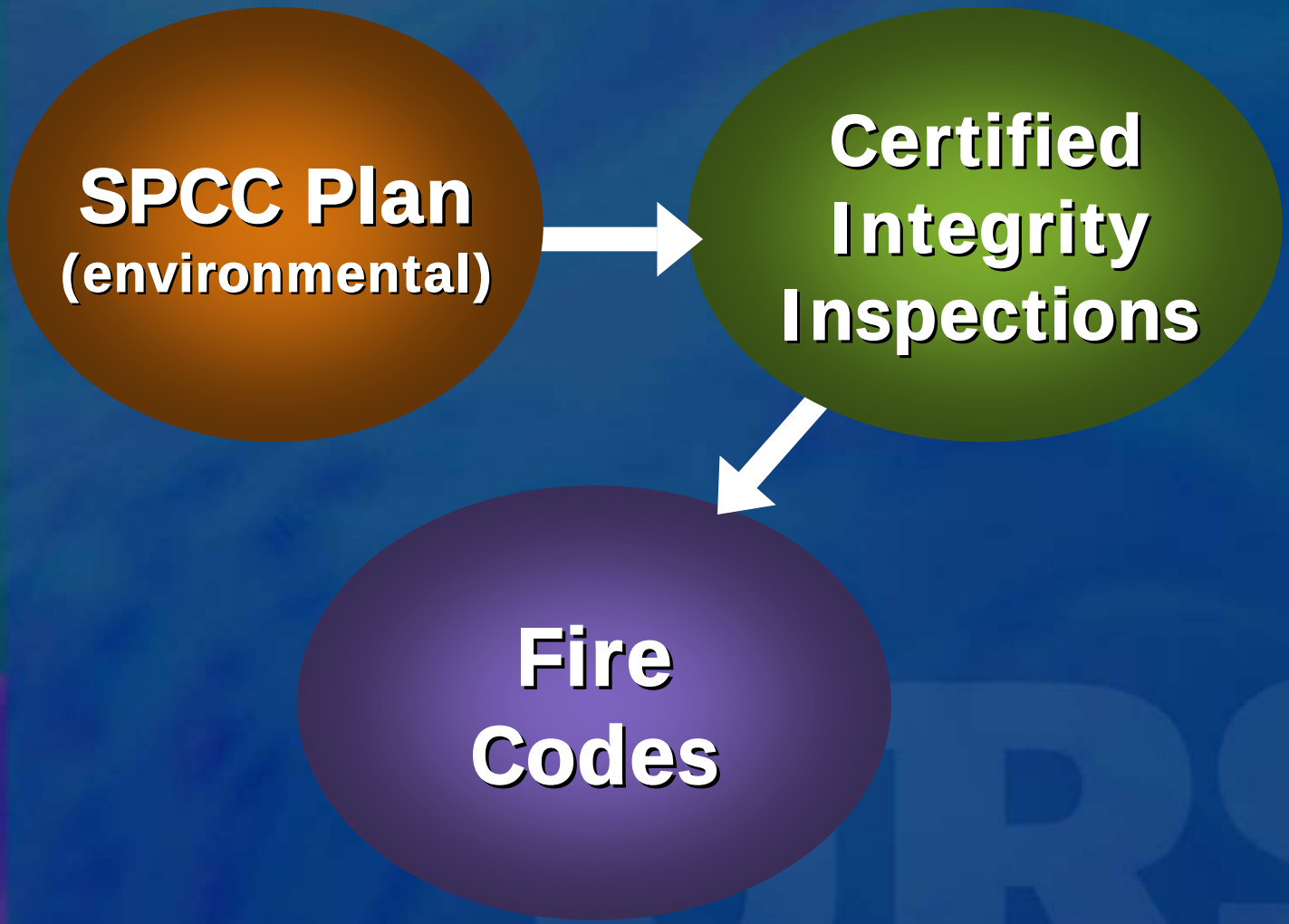
Confusion for Tank Owners: When Integrity Testing Finds Tank Deficiencies Not Directly Referenced in the SPCC Rule

FRESHWATER SPILLS SYMPOSIUM 2006

presented by
Ed Fahnline, P.E.

URS

Link Between SPCC Plan and Fire Codes



Purpose of Presentation

- Describe the relationship between government regulations and industry guidance.
- Describe the confusion tank owners may have when integrity testing discovers tank deficiencies not discussed in the SPCC Rule.
- Show the advantages for tank owners to receive more information about fire codes from SPCC Plan preparers and tank inspectors.

Overview of Presentation

- Overview of Regulations
- Compliance with Regulations
- Tank Inspections
- Tank Owner Confusion
- Potential Consequences of Tank Deficiencies
- Conclusions

Overview of Regulations

- Environmental
  - Spill prevention
  - Spill countermeasures and containment
- Fire Prevention
  - Oil tank spill reaching ignition source
  - Fire Code issues

Photo courtesy of Core Engineered Solutions

Dual Compartment Convault Protected AST (U.L. 2085)

There is an overlap between environmental and fire prevention issues.

Overview of Regulations
Federal

- 40CFR112 – Spill Prevention, Control, and Countermeasures (SPCC) Rule
  - SPCC Plan required if facility has aboveground storage capacity greater than 1,320 gallons of oil.
  - A revision of the SPCC rule became effective August 16, 2002.
  - The current SPCC compliance date to revise and implement Plan is October 31, 2007.

Overview of Regulations
Federal

- 29CFR1910.106 – OSHA Standards for Flammable and Combustible Liquids
  - Applicable to any business with containers storing materials that meet flammability and combustibility definitions
  - Includes gasoline and diesel fuel
  - Provisions similar to industry fire codes

Overview of Regulations

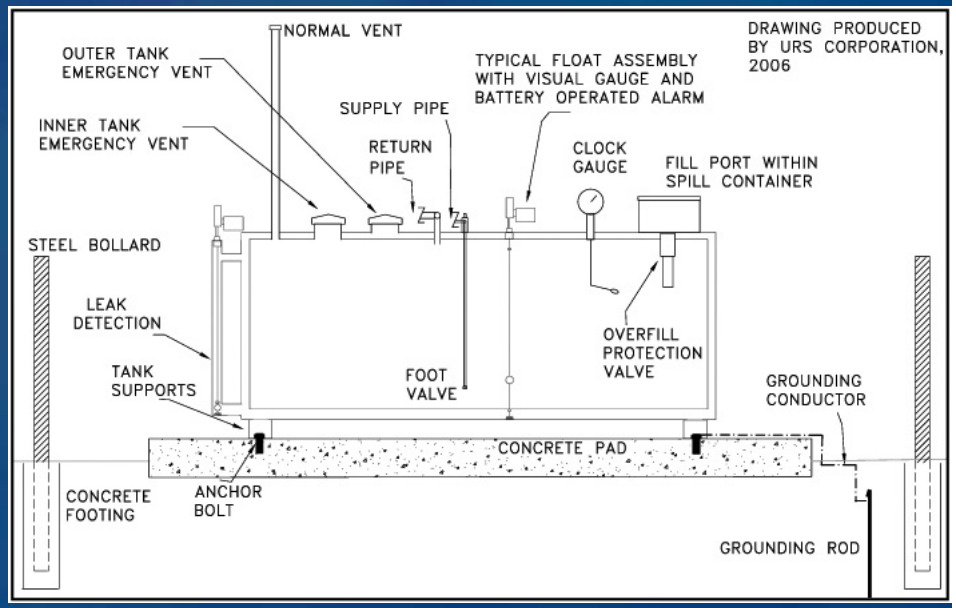
State / Local

- State and local AST regulations generally address:
  - tank installation and registration
  - spill containment
  - release reporting
  - fire prevention
  - corrective action procedures
  - tank closure requirements
- State / local fire marshal usually has important oversight role.

Overview of Regulations

Industry Standards and Codes

- Commonly, industry standards are partially or wholly adopted by state or local government oil control programs.
- Standards are not legally enforceable unless adopted or referenced by an applicable government regulation.



Typical U.L. 142 Double-Wall Aboveground Oil Storage Tank

Compliance with Regulations

- Potentially significant number of aboveground tank systems do not meet regulatory or industry standards.
- Tank deficiencies are due to a variety of causes such as:
  - Poor structural integrity
  - Improper installation
  - Tank placement
  - Missing or broken tank equipment
  - Poor maintenance

Clock gauge

Compliance with Regulations

Common Tank Deficiencies

- Environmental issues:
  - Failure of structural integrity or tank tightness test
  - No overfill protection / spill control
  - Broken tank gauge
  - Malfunctioning overfill or leak detection alarms
  - No or undersized secondary containment
  - No integrity testing program / no baseline data

Overfill protection valve

Compliance with Regulations

Common Tank Deficiencies

- Fire code issues:
  - Tank support structure inadequate
  - Venting indoors
  - No grounding
  - No emergency vent on inner or outer tank
  - Vent / vent pipe not adequately sized
  - Pipe not properly supported
  - Shared vent with another tank
  - Tank too close to adjacent tank
  - Tank unprotected from damage by vehicular traffic
  - Combustible materials in dike area

Compliance with Regulations

- Environmental and fire code deficiencies discovered by:
  - Tank failure or evidence of leak
  - Tank inspection by government inspector
  - Tank evaluation as part of SPCC Plan preparation
  - Certified inspections as per the SPCC rule or state regulations

Tank Inspections

- Federal SPCC Rule:
  - Test each bulk storage aboveground container for integrity on a regular schedule and whenever material repairs made.
  - After the new Integrity Testing requirements go into effect on 10-31-07, integrity testing will require visual inspection combined with another testing technique.
  - A Professional Engineer (P.E.) may use Environmental Equivalence (EE) or create a hybrid integrity testing program in accordance with good engineering practice.

Tank Inspections

- State/local integrity testing regulations are in some cases more stringent than the federal SPCC rule.
- The scope and interval of the certified integrity testing will depend on factors such as tank type, volume, configuration, age, and condition.
- The SPCC Guidance for Regional Inspectors by EPA provides detailed guidance concerning tank inspection and integrity testing.
- A certified (integrity) inspection must be performed as per industry standard(s) referenced in the SPCC Plan.

Tank Inspections

- Examples of Environmental Equivalence (*for new Integrity Testing requirements going into effect 10-31-07)*
  - Shop-built containers with a shell capacity of 30,000 gallons or less, combining visual inspection with either:
    1. elevation of container in a manner that decreases corrosion potential and makes all sides of container visible, or
    2. placement of a non-permeable barrier between container and ground,

    would be considered equivalent to non destructive testing methods.

Tank Inspections

- Examples of Environmental Equivalence (continued)
  - For tanks that meet these conditions, a P.E. must document an EE determination in the SPCC plan, and the equivalent test method must be in accordance with good engineering practices.
  - At a minimum, periodic visual inspections are needed by a qualified inspector (as determined in the standard).

Tank Inspections

Industry Standards

- STI SP001 (July 2005)
  - Provides an inspection schedule based on tank size and configuration
  - Formal inspections include tank foundation, supports, secondary containment, drain valves, ancillary equipment, piping, vents, gauges, grounding system, stairways, and coatings
- API 653 (November 2005):
  - Requires certified inspections based on a tank's service history
  - Certified inspection intervals of 5–20 years depending on the tank size and configuration

Tank Owner Confusion

- Once a SPCC Plan signed by a P.E., the next step is for the owner / operator to implement the Plan.
- This may include tank upgrades, employee training, and integrity testing.
- However, because fire code issues are not generally discussed in SPCC Plans, there may be no expectations on the part of the tank owner that fire code issues are relevant.

Tank Owner Confusion

- Incorrect expectations and confusion concerning integrity testing:
  - Many SPCC Plans may lack sufficient detail about integrity testing.
  - Owners may not be aware that certified inspection requires more than just a structural integrity test.
  - A certified inspection report is likely to discuss tank deficiencies in terms of industry codes and regulatory citations but may not provide a direct link between the applicable regulations and the industry standard which covers the actual deficiency.

Potential Consequences of Tank Deficiencies

- Tank failure resulting in oil spill, fire, or loss of generator power
- Possible fines from government inspections for fire code violations
- Increase in cost or loss of tank insurance
- Underestimated and inefficient spending for tank upgrades
  - In some cases, the decision to upgrade a tank or replace it could change based on additional upgrades required to meet fire codes

Conclusion

- Certified inspections should be a significant route through which tank deficiencies are discovered.
- A general understanding of fire code issues during the SPCC Plan stage will better enable tank owners to address tank deficiencies and thus avoid subsequent problems.

Conclusion

- SPCC Plan preparers should provide tank owner some context concerning fire codes.
- Companies that perform certified integrity testing should explain to their clients the relationship between the integrity test industry standards they must adhere to and government regulations.

Questions?

For more information contact:

Ed Fahnline, P.E.
URS Corporation
301-258-9780
ed_fahnline@urscorp.com